

U.S. Patent Application Serial No. 10/566,719
Response filed August 18, 2008
Reply to OA dated June 18, 2008

AMENDMENTS TO THE CLAIMS:

Please cancel claim 3 without prejudice or disclaimer, amend claim 1 and add new claims 18-20, as follows. This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently amended): An epoxy resin composition comprising, as essential components, an epoxy resin having two or more epoxy groups in the molecule and a polyamine borate as a curing agent for the epoxy resin; wherein

the polyamine borate is obtained from

_____ (i) a polyamine-based compound (A) having at least one of an amino group and an imino group in the molecule, wherein the polyamine-based compound (A) is an aliphatic polyamine or an alicyclic polyamine, and

_____ (ii) a acid-based compound (B) represented by the following general formula (1):



wherein n represents an integer of 0 to 3, R represents an alkyl group represented by C_mH_{2m+1} , and m represents an integer of 1 to 10.

Claim 2 (Original): The epoxy resin composition according to claim 1, wherein the epoxy resin has an epoxy equivalent of 100 to 1000.

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Claim 3 (Canceled).

Claim 4 (Original): The epoxy resin composition according to claim 1, wherein a ratio of the content of a nitrogen-containing group of the polyamine-based compound (A) to the content of boron of the boric acid-based compound (B) is from 1:1 to 1:6 in terms of a molar ratio.

Claim 5 (Original): The epoxy resin composition according to claim 1, wherein the content of the polyamine borate is from 4 to 120 parts by mass based on 100 parts by mass of the epoxy resin.

Claim 6 (Original): The epoxy resin composition according to claim 1, wherein the content of boron in the polyamine borate is from 0.2 to 10 parts by mass based on 100 parts by mass of the epoxy resin.

Claim 7 (Original): The epoxy resin composition according to claim 1, which is produced by uniformly dissolving the epoxy resin and the polyamine borate in a solvent containing a lower alcohol.

Claim 8 (Original): The epoxy resin composition according to claim 1, which further comprises, as the curing agent for epoxy resin, a curing agent other than the polyamine borate.

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Claim 9 (Original): The epoxy resin composition according to claim 1, wherein a curing agent other than the polyamine borate is included, and it is at least one selected from dicyandiamide, an aromatic polyamine, a phenol novolak resin and an imidazole compound.

Claim 10 (Original): A method for producing a nongel-like epoxy resin composition, which comprises: heat-treating the epoxy resin composition according to claim 7 in a solution state without being gelled.

Claim 11 (Original): A method for producing a nongel-like epoxy resin composition, which comprises: preparing the polyamine borate and the epoxy resin described in claim 1; and uniformly microdispersing the polyamine borate in the epoxy resin or a epoxy resin solution, which is obtained by diluting the epoxy resin with a solvent.

Claim 12 (Previously presented): A method for producing an epoxy resin composition, which comprises: drying the nongel-like epoxy resin composition obtained in claim 10 or 11 at a low temperature of 100°C or lower so as to prevent a curing reaction from proceeding, to thereby remove the solvent included.

Claim 13 (Original): A method for producing a powdered epoxy resin composition, which

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comprises: grinding a solid obtained in claim 12.

Claim 14 (Original): A method for producing a molded article, which comprises: curing the powdered epoxy resin composition obtained in claim 13 by compression-molding under heating.

Claim 15 (Original): A method for producing a heat-resistant laminate sheet, which comprises: forming an uncured coating film layer of the epoxy resin composition according to claim 1 on the surface of a heat-resistant substrate sheet; laying another heat-resistant substrate sheet on the uncured coating film layer; and curing the uncured coating film layer after thermal contact bonding of both heat-resistant substrate sheets.

Claim 16 (Original): The method for producing a heat-resistant laminate sheet according to claim 15, wherein the heat-resistant laminate sheet is a copper-cladded laminate.

Claim 17 (Previously presented): The epoxy resin composition according to claim 1, wherein the polyamine borate is obtained by conducting at least one step of filtration, vacuum drying and washing, subsequent to a reaction between the polyamine-based compound (A) and the boric acid-based compound (B).

Claim 18 (New): An epoxy resin composition comprising, as essential components, an epoxy

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resin having two or more epoxy groups in the molecule and a polyamine borate as a curing agent for the epoxy resin; wherein the polyamine borate is obtained from

(i) a polyamine-based compound (A) having at least one of amino group and imino group in the molecule, and

(ii) a boric acid-based compound (B) represented by the following general formula (1):



wherein n represents an integer of 0 to 3, r represents an alkyl group represented by $\text{C}_m\text{H}_{2m+1}$, and m represents an integer of 1 to 10.

Claim 19 (New): The epoxy resin composition according Claim 18, wherein n shown in the general formula (1) represents an integer of 1 to 3.

Claim 20 (New): The epoxy resin composition according Claim 18, wherein the polyamine-based compound (A) is an aromatic.